PALESTINE Climate Fact Sheet

Palestine (WEST BANK AND GAZA STRIP) Climate Fact Sheet

I- GENERAL CLIMATE OVERVIEW

About 70% of the average rainfall in the country falls between November and March, while the months of June to August are often rainless. Rainfall is unevenly distributed, decreasing sharply as one moves southwards. In the extreme south close to the Dead Sea area, annual rainfall averages less than 100 mm while; in the north, average annual rainfall is more than 1100 mm (FAO, 2008). The West Bank in general is relatively arid: the northern part of the West Bank receives the most rainfall, approximately 700mm/year, whereas the southern end receives only 80–100mm/year. The Gaza strip has a predominantly flat coastal terrain however still receives varied rainfall ranging between 200 mm/year in the south and 400 mm/year in the North (UNDP, 2010). Even though the Palestinian territories are traditionally characterized under "Mediterranean" climate, temperature, just like rainfall, vary with latitude and altitude. While January is the coldest month in the Palestinian territories with average around 12°C, July- August are peak summer with averages around 27°C.

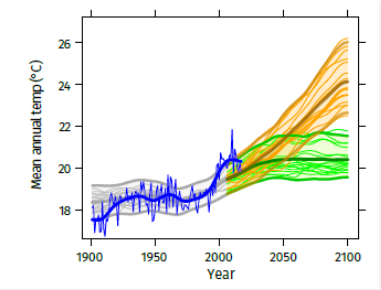


Figure-1: Historical and Projected Mean Annual Temperature (WHO, 2022)

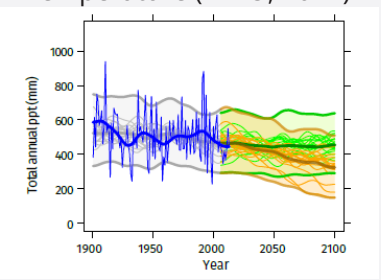


Figure-2: Historical and Projected Total Annual Precipitation (WHO, 2022)

II- CLIMATE CHANGE TRENDS

From Past to Present:

Over the last 30 years, the mean temperature in the Middle East significantly increased at a rate of 0.4°C per decade, while rainfall decreased (Ministry of Foreign Affairs of the Netherlands, 2018).

Projected:

- **Temperature:** Under a high emissions scenario(1), the mean annual temperature is projected to rise by about 4.4°C on average by the end-of-century, compared with 1981–2010. If emissions decrease rapidly, the temperature rise is limited to about 1.3°C (figure 1).
- **Precipitation** Total annual precipitation is projected to decrease by

about 30% on average under a high emissions scenario, although the uncertainty range is large (-47% to -12%). If emissions decrease rapidly, there is little projected change on average: a decrease of 6% with an uncertainty range of -15% to +6% (figure 2).

III- CLIMATE CHANGE IMPACTS

a- Natural Hazards

One of the main impacts of the change in temperature and rainfall patterns is the occurrence of natural hazards. Figure 3 summarizes the risk level of natural hazards in Palestine. It shows that the country has a high risk of landslides, extreme heat, wildfire, and water scarcity.

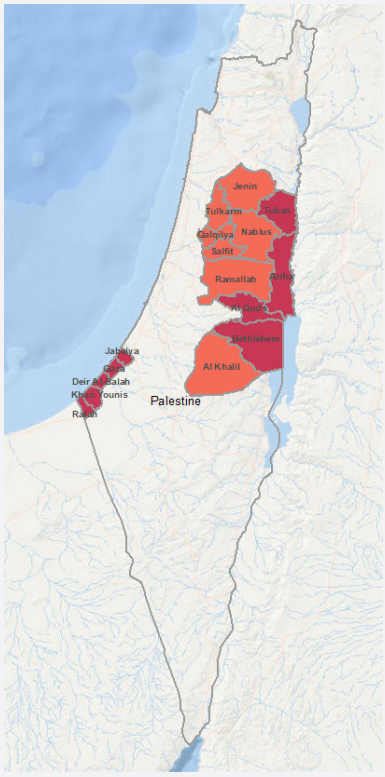
The main climate-related natural hazards that have occurred from 1900 till 2023 in Palestine are seen in table 1:

Table 1: Climate-related Natural Hazards (from 1900 till 2023) (EM-DAT, 2023)

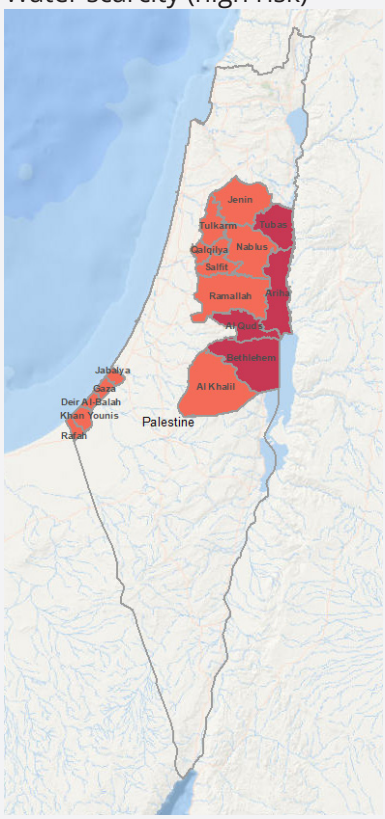
Disaster Type	Occurrence (1900-2023)
Flood	4 (of which 3 recorded riverine floods, 1 recorded flash flood)
Convective Storm	3
Extreme temperature	2 (of which 1 recorded cold wave, 1 recorded extreme winter conditions)
	Total deaths: 17

Cold waves are a common event in Palestine. A recent cold wave occurred in January 2020 that included heavy rain floods, winds, and low temperatures. The heavy rain generated floods in several parts of Palestine and thousands of people were affected with many families being evacuated from their homes. The extreme weather conditions resulted in the deaths of 3 people: two in the Gaza Strip and one in Jerusalem due to the heavy rains and flooding (ReliefWeb, 2020). Another cold wave happened during January 2022 which resulted in the death of 4 people due to improper use of heating sources in the West Bank (ReliefWeb, 2022).

On the other hand, sea level is projected to increase by 0.1-0.4 m by 2100 along the Gaza coastline which may lead to saltwater intrusion



Water scarcity (high risk)



Extreme heat (high risk)

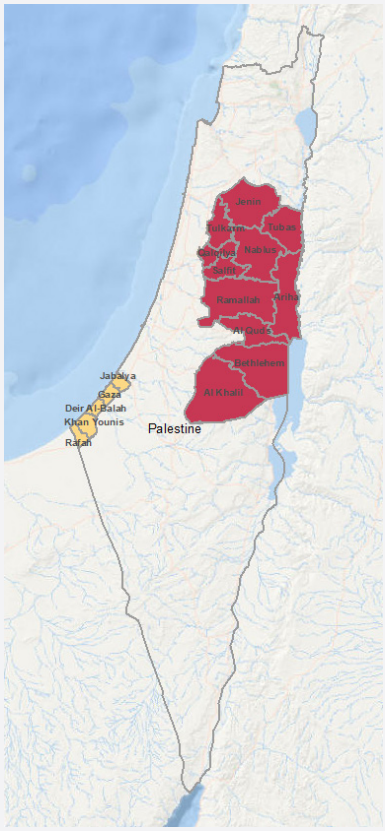
and erosion of land and infrastructure. Saltwater intrusion may also degrade soils and coastal agricultural land, which constitute 43% of Gaza's coastal area (USAID, 2017).

b- Water

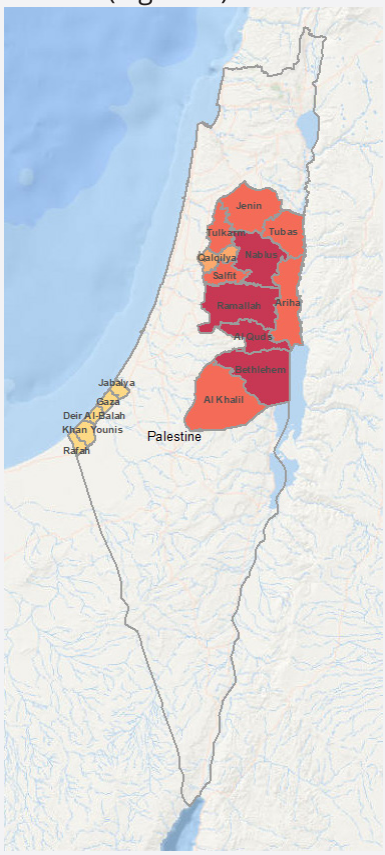
Population growth, over-extraction of groundwater resources, and climate impacts caused a deficit of 28 million L per year in water resources by 2020 in the West Bank and Gaza (USAID, 2017). Climate change will likely worsen existing water stress challenges in Palestine and may lead to competition and tension with neighbouring countries which share the transboundary river basins, such as along the Jordan and Yarmouk Rivers (Teotónio et al., 2020). The absence of a resolution on natural water allocations between Israel and the Palestine, where the former controls access to water in the latter, adds additional complexities to the situation. The conflict context in Palestine contributes to overall vulnerability to climate stressors. For example, the 2021 airstrikes in Gaza damaged the North Gaza Seawater Desalination Plant, affecting the sanitation, water supply, and hygiene of around 600,000 people (Amnesty International, 2021).

c- Agriculture

Agriculture is an essential sector in Palestine, formally employing 13.4% of the labour force and making up 90% of all informal employment (Anera, 2020). In addition, it contributes about 5% to the heavily aid-dominated GDP (USAID, 2017). Over 80% of agriculture in Palestine is rainfed, while 19% is irrigated (WHO, 2022). Increased temperatures and frequent droughts are reducing crop yields, diminishing soil quality, and reducing water available for irrigation. In 2010 for instance, heat waves contributed to a 20% reduction in olive production, a particularly important crop in the region. Similarly, heat waves are negatively impacting essential livestock: in 2015, 15% of chickens died in Gaza because of a heat wave in which temperatures climbed to 12°C above the annual average (USAID, 2017). It is also seen that climate change decreases crop growth duration which will consequently reduce crop yields (figure 4). In addition, the fragility of the Palestinian economy has made it especially vulnerable to global shifts, and flour mills in the country got significantly harmed by the increase in global food prices due to the Russia-Ukraine conflict (Shaban, 2022).



Wildfire (high risk)



Landslide (high risk)

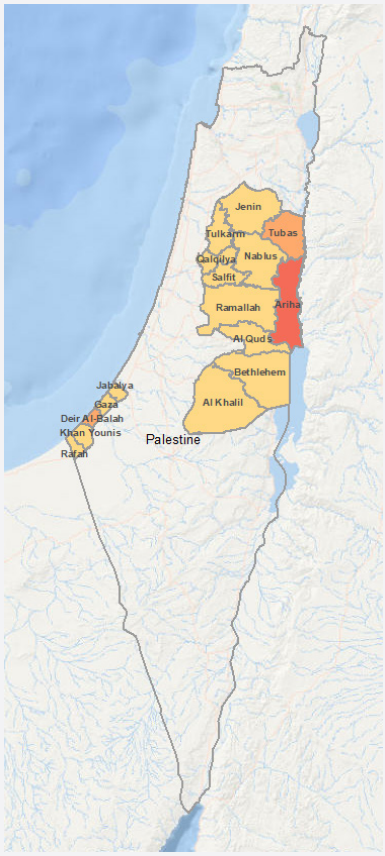
d- Energy

Renewable Energy: Within the electricity mix, renewables currently have a share of 3%. Solar energy has the most renewable energy potential in Palestine. The Palestinian Territories benefit from one of the highest levels of solar radiation in the MENA region, with a daily average of about 5.4 kWh/m2 (in December, the daily solar radiation can reach 2.63 kWh/ m2, while in June the radiation can be as high as 8.4 kWh/ m2). In total, Gaza's rooftop solar energy potential is estimated at 163 MW, while the West Bank's potential amounts to 534 MW. These values indicate good potential for harvesting solar energy to use in applications such as water heating systems, drying systems, water desalination, and pumping. However, to date, only small-scale solar PV and thermal systems have dominated the Palestinian market, while large-scale projects are missing. In 2015, around 57% of households used solar water heating systems. However, in recent times the use of such systems has significantly decreased as the imposed blockade and import restrictions on technical equipment have hampered the use of the technology in the Gaza Strip, and in the West Bank the switch to electrical water heaters has resulted in lower demand for solar heating systems (Ersoy et al., 2022).

e- Health

Climate change has the potential to directly exacerbate food insecurity, an issue already affecting approximately 25% of the West Bank's population, and 56% of Gaza's population. Reduced precipitation, warmer temperatures, and an increase in evaporation rates can reduce water supply and decrease water quality, which can lead to an increase in cholera, diarrhea, and other diseases. Water-related diseases are especially prevalent in Gaza, accounting for 26% of all diseases observed. Vector-borne diseases are also expected to become more widespread with a growing mosquito problem and spread of new and existing parasites due to changing climate conditions (USAID, 2017). Rising temperatures could also cause heat-related illnesses such as dehydration, rash, cramps, heat stroke, heat exhaustion and death. Current heat-related deaths among the elderly (65+ years) are under 2 per 100 000. Under a high emission scenario, heat-related deaths among the elderly (65+ years) are projected to rise to about 50 per 100 000 by 2080. A rapid reduction in emissions (RCP2.6) could significantly reduce deaths among the elderly in 2080 to around 11 per 100 000 (figure 5).

On the other hand, sand and dust storms have severe impacts on human health, by increasing particulate matter and carrying harmful substances and pathogens, all of which contribute to air pollution and associated respiratory problems. Ambient air pollution can have direct and sometimes severe consequences for health. Fine particles, which penetrate deep into the respiratory tract, subsequently increase



River flood (medium risk)

Urban flood (low risk)

Figure-3: Climate-Related Natural Hazards Risk Level (ThinkHazard, 2020)

mortality from respiratory infections, lung cancer and cardiovascular disease. In fact, 1031 deaths were recorded in Palestine caused by ambient air pollution in 2016 (WHO, 2022).

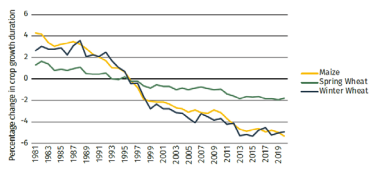


Figure-4: Percentage Change in Crop Growth Duration in 1981–2019 (Relative to the 1981–2010 Average) (WHO, 2022)

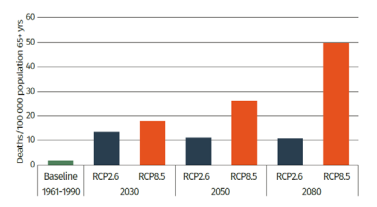


Figure-5: Heat-Related Mortality in Population 65 Years or Above (WHO, 2022)

IV- CLIMATE CHANGE RESPONSE: NATIONAL AND INTERATIONAL

➔ The Palestinian Government recently established the National Committee on Climate Change (NCCC), which includes members from different sector ministries and agencies, academia, NGOs, and the private sector. The Environment Quality Authority (EQA) serves as the NCCC Secretariat. The overarching role of the NCCC is to support the Palestinian Government in implementing and evaluating climate policies. The NCCC has proposed a National Institutional Framework for Climate Change (NIFCC) as an integrated approach to address climate change (USAID, 2017).

- National laws and policies include (USAID, 2017):
- Climate Change Adaptation Strategy and Programme of Action for the Palestinian Authority (2010)
- The National Strategy, Action Programme and Integrated Financing Strategy to Combat Desertification in the Occupied Palestinian Territory (2012)
- National Development Plan 2014-16 (2014)
- National Adaptation Plan (2016)

Other related sectoral policies include: National Agriculture Sector Strategy "Resilience and Development" 2014-2016 (2014), National Water and Wastewater Strategy for Palestine (2013), National Biodiversity Strategy and Action Plan for Palestine (1999).

➔ The different international documents submitted as part of the UNFCCC are seen in table 2:

Table 2: Timeline of UNFCCC Document Submission (ClimateWatch, 2022)

Date	Document Submitted
2016	First National Communication
2017	First NDC
2021	Revised First NDC

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